



Countermeasures for High-Risk Locations for Wildlife Related Crashes in Tennessee

Problem Description

An average of 7,700 vehicle crashes involving wildlife are reported each year in Tennessee, with likely many more wildlife-related crashes that go unreported. Collisions with wildlife are not only a significant detriment to wildlife populations, but also are the cause of human injuries and fatalities as well as economic losses. TDOT is seeking to analyze the patterns associated with these crashes and to implement effective countermeasures to prevent them, and to mitigate the high societal cost of this problem. White-tailed deer are the predominant species affected statewide, with black bear and elk populations affected predominantly in East Tennessee. GIS analysis of wildlife crash locations, roadway and environmental characteristics, population growth patterns, and wildlife behavior is needed to determine the current high-risk zones for wildlife crashes as well as areas where wildlife related crashes are predicted to increase in Tennessee.

PROJECT NUMBER:
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PROJECT SCHEDULE:
August 2023 to July 2025

Research Objectives

- Define zones across Tennessee of low and high risk for wildlife crashes where the prediction is based on TDOT route and environmental characteristics, urban growth patterns and rural land use changes, crash frequency (cluster analysis), and probable wildlife behavior (e.g., predicted road crossings).
- Use best practices for estimating the number of unaccounted wildlife crashes and attempt to apply a “true” crash count per road segment (possibly tied to route type or other characteristic based on high correlation and statistical analysis).
- Conduct an extensive literature review on wildlife-vehicle crash countermeasures and review other states’ crash mitigation countermeasures with similar environmental and roadway characteristics and (primary) wildlife species like Tennessee to create a selection matrix that considers effectiveness, design, average cost, and timing.

Potential Implementation and Expected Benefits

All the GIS data that will be created, acquired, and mapped as part of Task B will be provided to TDOT for use in future research and analysis. The project team will work with TDOT’s Information Technology Division (IT) and project managers to ensure the data meets TDOT data integration standards and can be utilized on TDOT’s information platforms. Additionally, the web map that will be used to acquire input regarding wildlife populations can serve as a useful template for public engagement by enabling TDOT to easily gather spatial data from citizens. The web map template and base map layers will be shared with TDOT for this purpose, and additional guidance for implementing this system can be shared.